

Listing of the Claims:

Claims:

1-13. (Cancelled)

16. **(Currently amended)** A The method according to claim 4, 56, wherein the members of the population are selected from the group consisting of: Australian sheep blowfly (*Lucilia cuprina*), New world screwworm (*Cochliomyia hominivorax*), Old World Screwworm (*Chrysomya bezziana*), Tsetse fly (*Glossina* spp.), Stable Fly (*Stomoxys calcitrans*), Face Fly (*Musca autumnalis*), Horn Fly (*Haematobia irritans*), Asian tiger mosquito (*Aedes albopictus*), yellow fever mosquito (*Aedes aegypti*), malaria mosquitoes, e.g. (*Anopheles gambiae*, *Anopheles Stephens*, *Anopheles funestus*, *Anopheles arabiensis*, *Anopheles dirus*), Other mosquito vectors of disease, e.g. (*Culex pipiens*, *Culex quinquefasciatus*), Japanese beetle (*Popilla japonica*), White-fringed beetle (*Graphognathus* spp.), Boll weevil (*Anthonomus grandis*), Corn Rootworms: Western (*Diabrotica virgifera virgifera*), Northern (*Diabrotica barberi*), Southern (*Diabrotica undecimpunctata howardi*) and Mexican (*D. virgifera zea*), Red Palm Weevil (*Rhynchophorus ferrugineus*), Sweet potato Weevils (*Cylas formicarius*, *eucepes postfasciatus*), Colorado beetle (*Leptinotarsa decemlineata*), Pine Shoot Beetle (*Tomicus piniperda*), Mahogany Shoot Borer (*Hypsipyla robusta*), Flour Beetle (*Tribolium confusum*), Pea Weevil (*Bruchus pisorum*), Grain borers (*Prostephanus truncatus*, *Rhyzopertha dominica*), Flat grain beetle (*Cryptolestes ferrugineus*), Granary & Rice Weevils (*Cytophilus* spp.), Citrus blackfly (*Aleurocanthus woglumi*), Oriental fruit fly (*Dacus dorsalis*), Olive fruit fly (*Dacus oleae*), tropical fruit fly (*Dacus cucurbitae*, *Dacus zonatus*), Mediterranean fruit fly (*Ceratitidis capitata*), Natal fruit fly (*Ceratitidis rosa*), Cherry fruit fly (*Rhagoletis cerasi*), Queensland fruit fly (*Bactrocera tryoni*), Caribbean fruit fly (*Anastrepha suspensa*), Carambola Fruit Fly (*Bactrocera carambolae*), Mexican Fruit Fly (*Anastrepha ludens*), Onion Fly (*Delia antiqua*), Mushroom flies (*Lycoriella mali*, *Lycoriella auripila* & *Megaselia* spp.), Other fruit flies (Tephritidae), Gypsy moth (*Lymantria dispar*), Codling moth (*Cydia pomonella*), Brown tail moth (*Euproctis chrysorrhoea*), rice stem borer (*Tryporyza incertulas*), Pink Bollworm (*Pectinophora gossypiella*), Navel Orangeworm (*Amyelois transitella*), Peach twig worm (*Anarsia lineatella*), Painted Apple Moth (*Teia anartoides*), Corn Earworm (*Helicoverpa armigera*, *Helicoverpa zea*), Tobacco Budworm (*Heliothis virescens*—and other Heliothines), Tobacco Hornworm (*Maduca sexta*), Potato Tuber

Moth (*Phthorimaea operculella*)₁, Date Moth (*Ectomyelois ceratoniae*)₁, Oriental Fruit Moth (*Grapholita molesta*)₁, Diamondback moth (*Plutella xylostella*)₁, Indian Meal Moth (*Plodia interpunctella*)₁, Greenhouse Whiteflies (e.g. *Bemisia tabaci*, *Trialeurodes vaporariorum*)₁, Cattle Fever tick (*Boophilus microplus*)₁, and other ticks of veterinary importance and Psocids (*Liposcelis* spp.).

17. **(Currently amended)** A The method according to claim 16, wherein the targeted population is malaria mosquitoes.

18. **(Currently amended)** A The method according to claim 16, wherein the targeted population is medfly.

19. **(Currently amended)** A ~~The~~ method according to claim 4, 56, wherein the genetic trait to be inhibited or reversed comprises multiple alleles.

20. **(Currently amended)** A The method according to claim 4, 56, for the inhibition or reversal of multiple genetic traits.

21-22. **(Cancelled)**

23. **(Currently amended)** A The method according to claim 22, comprising ~~treatment with the pesticide and~~ providing said refugia to permit survival of non resistant members of the population.

24. **(Currently amended)** A The method according to claim 22, 56, wherein the pesticide is expressed by a food crop.

25. **(Currently amended)** A The method according to claim 24, wherein the pesticide is *Bacillus thuringiensis* toxin expressed by the food crop.

26. **(Currently amended)** A The method according to claim 24, wherein the refugia are provided by individual plants forming the food crop.

27. **(Currently amended)** A The method according to claim 4, 56, wherein the numbers of individuals introduced are calculated to inhibit a trait developing in a population which is substantially free from the trait.

28. **(Currently amended)** A The method according to claim 4, 56, wherein the numbers of individuals introduced are 10% or less of the population.

29. **(Currently amended)** A The method according to claim 4, 56, wherein the numbers of individuals introduced are calculated to reverse a trait already present in a population.

30. **(Currently amended)** A The method according to claim 4, 56, wherein the numbers of individuals introduced are at least equal to the numbers of individuals in the population.

31. **(Currently amended)** A The method according to claim 4, 56, wherein the individuals carrying the counterpart in the introduced counterpart also carry a further trait conferred on heterozygotes and/or homozygotes therefor.

32. **(Currently amended)** A The method according to claim 31, wherein the further trait is ~~susceptibility to a toxin or inability to diapause~~ or refractoriness to a pathogen.

33. **(Cancelled).**

34. **(Currently amended)** A The method according to claim 4, ~~for the inhibition or reversal of the spread of a genetic trait in a non-human population capable of sexual reproduction, the method comprising introducing sexually compatible individuals substantially homozygous for a counterpart of the trait into the target population~~ 56, wherein the individuals released into the target population are transgenics modified to carry a second trait which is dominant lethal or which results in reduced average fitness in at least one subsequent generation.

35. **(Currently amended)** A The method according to claim 34, wherein said fitness associated with said second trait is not zero for the immediately subsequent generation.

36. **(Currently amended)** A The method according to claim 34, wherein the second trait confers a reduced level of fitness on individuals carrying that trait in either the heterozygous or homozygous form.

37. **(Currently amended)** A The method according to claim 34, wherein said second trait is substantially not linked to the counterpart.

38. **(Currently amended)** A The method according to claim 34, wherein the introduced individuals are homozygous for both the second trait and a suppressor therefor.

39. **(Currently amended)** A The method according to claim 37, wherein the suppressor is substantially not linked to the second trait.

40. **(Currently amended)** A The method according to claim 37, wherein the suppressor is linked to the counterpart of the trait to be inhibited or reversed.

41. **(Currently amended)** A The method according to claim 34, wherein the second trait is a dominant lethal.

42. **(Currently amended)** A The method according to claim 34, wherein the second trait is selective for females.

43-49. **(Canceled)**

50. **(New)** The method according to claim 34, wherein the dominant lethal gene is controlled by environmental conditions, diurnal rhythm or dietary components.

51. **(New)** The method according to claim 50, wherein the dominant lethal gene is controlled by tetracycline.

52. **(New)** The method according to claim 34, wherein the dominant lethal gene is sex-specific.

53. **(New)** The method according to claim 1, wherein the pesticide is a chemical pesticide.

54. **(New)** A method of controlling a target insect population capable of sexual reproduction, the method comprising:

inhibiting or reversing the spread, in a target insect population of a first genetic, non wild type trait, by introducing sexually compatible individuals substantially homozygous for a wild type, sensitive counterpart of the resistance trait into the target insect population, wherein said first trait confers resistance to a pesticide or tolerance to predators, viruses, parasites or parasitoids; a heterozygote form of the resistance trait having an associated reduced level of fitness by comparison with the resistant homozygotes in the presence of pesticide, predator, virus, parasite or parasitoid, and both the heterozygote and resistant homozygote forms having an associated reduced level of fitness by comparison with the sensitive homozygote counterpart form in the absence of the pesticide, predator, virus, parasite or parasitoid; and

treating with the pesticide, or application of the predator, virus, parasite or parasitoid, and use of refugia to permit survival of non resistant members of the population.

55. **(New)** The method according to claim 54, wherein the individuals released into the target insect population are transgenics modified to carry a second trait which is dominant lethal or which results in reduced average fitness in at least one subsequent generation.

56. **(New)** A method of controlling a target insect population capable of sexual reproduction, the method comprising:

inhibiting or reversing of the spread, in a target insect population, of a first genetic, non wild type, pesticide-resistance trait, by introducing sexually compatible individuals substantially homozygous for a wild type, sensitive counterpart of the resistance trait into the target insect population, wherein a heterozygote form of the resistance trait having an associated reduced level of fitness by comparison with the resistant homozygotes in the presence of a pesticide, and both the heterozygote and resistant homozygote forms having an associated reduced level of fitness by comparison with the sensitive homozygote counterpart form in the absence of the pesticide; and

treating with the pesticide and using refugia to permit survival of non resistant members of the population.